

ABSTRACT OF THE DISCLOSURE

A packet synthesizing unit packetizes transmit data and thereby creates a transmit packet data, and more specifically, synthesizes the number of the transmit data indicated by a packet-length information from a packet length controlling unit into a transmit packet data. A frame synthesizing unit appends the packet-length information for transmission to a header of the transmit packet data to thereby create a transmit frame. A wireless transmit unit converts the transmit frame into a wireless transmit signal and wirelessly transmits the wireless transmit signal. In the wireless transmission, the packet length controlling unit controls the packet length of the transmit data according to a transmit rate in the wireless transmit unit. The packet length controlling unit reduces the packet length when the transmit rate is relatively high and extends the packet length when the transmit rate is relatively low. This improves the transmission efficiency and communication quality.